## PATENT CLAIMS

1. Pressure sensor, comprising

a pressure measuring cell having

an essentially cylindrical platform of a first diameter and a first thickness,

a measuring membrane of a second diameter and a second thickness, joined to an end face of the platform,

wherein the measuring cell is axially clamped between

an elastic sealing ring of a third diameter and a third thickness, bearing against the membrane-containing end face of the pressure measuring cell, and

a support ring of a fourth, outer diameter, a fourth inner diameter and a fourth thickness, wherein the support ring supports the membrane-far, rear face of the pressure measuring cell; characterized in that

the dimensions of the support ring are matched to the dimensions of the sealing ring and the pressure measuring cell in such a way that a radial deformation of the membrane-containing face caused by the axial clamping of the pressure measuring cell is so small, that the span error of the pressure sensor due to a reduction of the axial clamping force by at least 10% amounts to not more than 0.02%.

2. Pressure sensor as claimed in claim 1, wherein the inner diameter of the support ring is chosen such that the span error in the case of a reduction of the clamping force by at least 20% amounts to not more than about 0.02%.

3. Pressure sensor as claimed in claim 1, wherein the inner diameter of the support ring is chosen such that the span error in the case of a reduction of the clamping force by at least 10%, respectively at least 20%, amounts to not more than about 0.01%.

4. Pressure sensor as claimed in one of the claims 1 to 3, wherein axial clamping force amounts to between 350 N and 550 N.

5. Pressure sensor as claimed in one of the claims 1 to 4, wherein the platform and the measuring membrane are made of the same material, especially a ceramic material.

6. Pressure sensor as claimed in one of the claims 1 to 5, wherein the support ring is made of the same material as the platform.

7. Pressure sensor as claimed in one of the claims 1 to 6, wherein the support ring is connected fixedly to the platform.

8. Pressure sensor as claimed in one of the claims 1 to 7, wherein the support ring has at least the thickness of the platform.

9. Pressure sensor as claimed in one of the claims 1 to 8, further comprising a housing with a measuring cell chamber for receiving the pressure measuring cell, wherein the housing has an internal, axial bearing surface, which axially supports the sealing ring, and a threaded ring, which engages an internal thread in a wall of the measuring cell chamber and exerts an axial clamping force on the rear, measuring-cell-far side of the support ring.

10. Pressure sensor as claimed in one of the claims 1 to 9, further comprising means for minimizing the friction

between the threaded ring and the support ring.

11. Pressure sensor as claimed in one of the claims 1 to 9, wherein the coefficient of static friction between the support ring and the threaded ring is less than 0.2.

12. Method for the iterative optimizing of the dimensions of a support ring for a pressure sensor, as claimed in one of the preceding claims, comprising the steps of:

(i) Determining a geometry for the support ring;

(ii) calculating a first span change of the pressure sensor under a first axial clamping force;

(iii) calculating a second span change of the pressure sensor under a second axial clamping force;

(iv) ascertaining a span error by comparing the first span change with the second span change;

(v) evaluating the span error; and

(vi) varying the geometry of the support ring, and repeating the steps (ii) to (vi) until a suitable geometry for a sufficiently small span error is found.